

An aerial photograph of a suburban neighborhood. A multi-lane road runs vertically through the center. To the right of the road is a river. A red square marker is placed on the riverbank, near a small island. The text is overlaid on a black arrow-shaped background pointing to the right.

PRETREATMENT PRACTICES SELECTION IMPLEMENTATION MAINTENANCE

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2 Iron Enhanced Sand Filters



26 Bioretention Basins



Primary Pretreatment Methodology: Shallow Dry Sumps



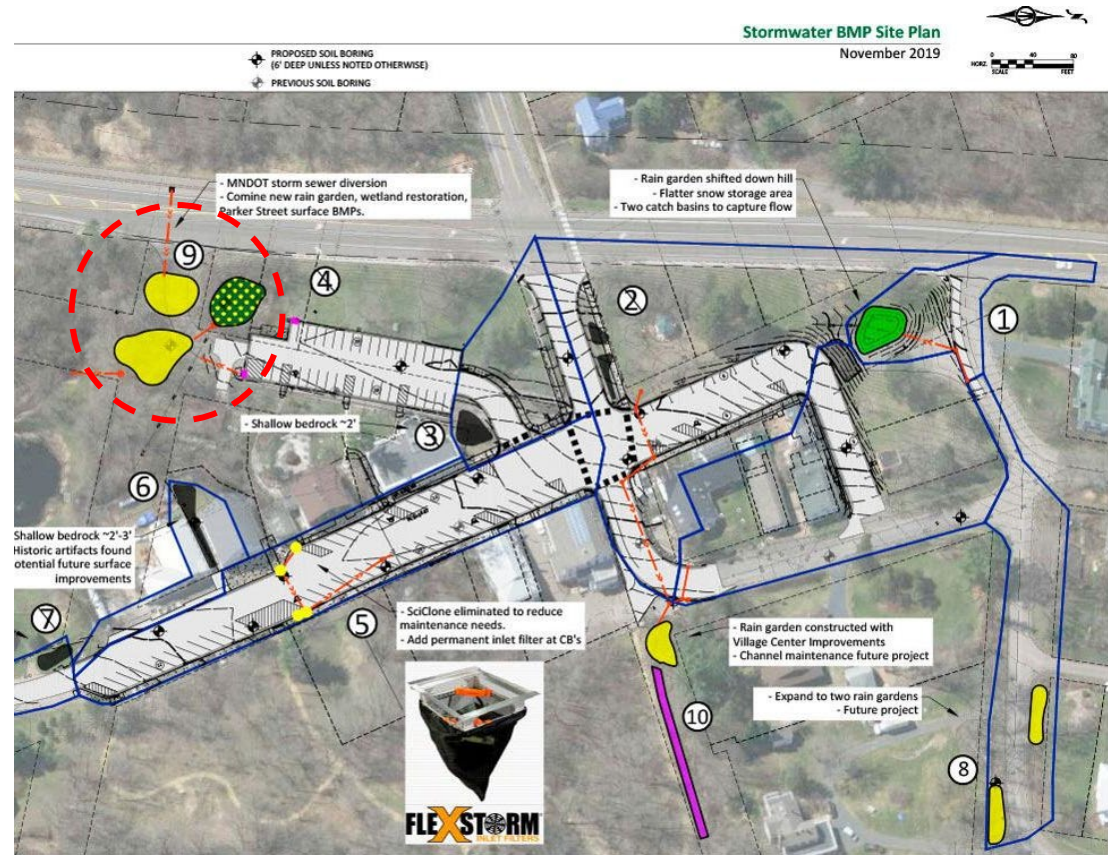
Primary Pretreatment Methodology: Shallow Dry Sumps



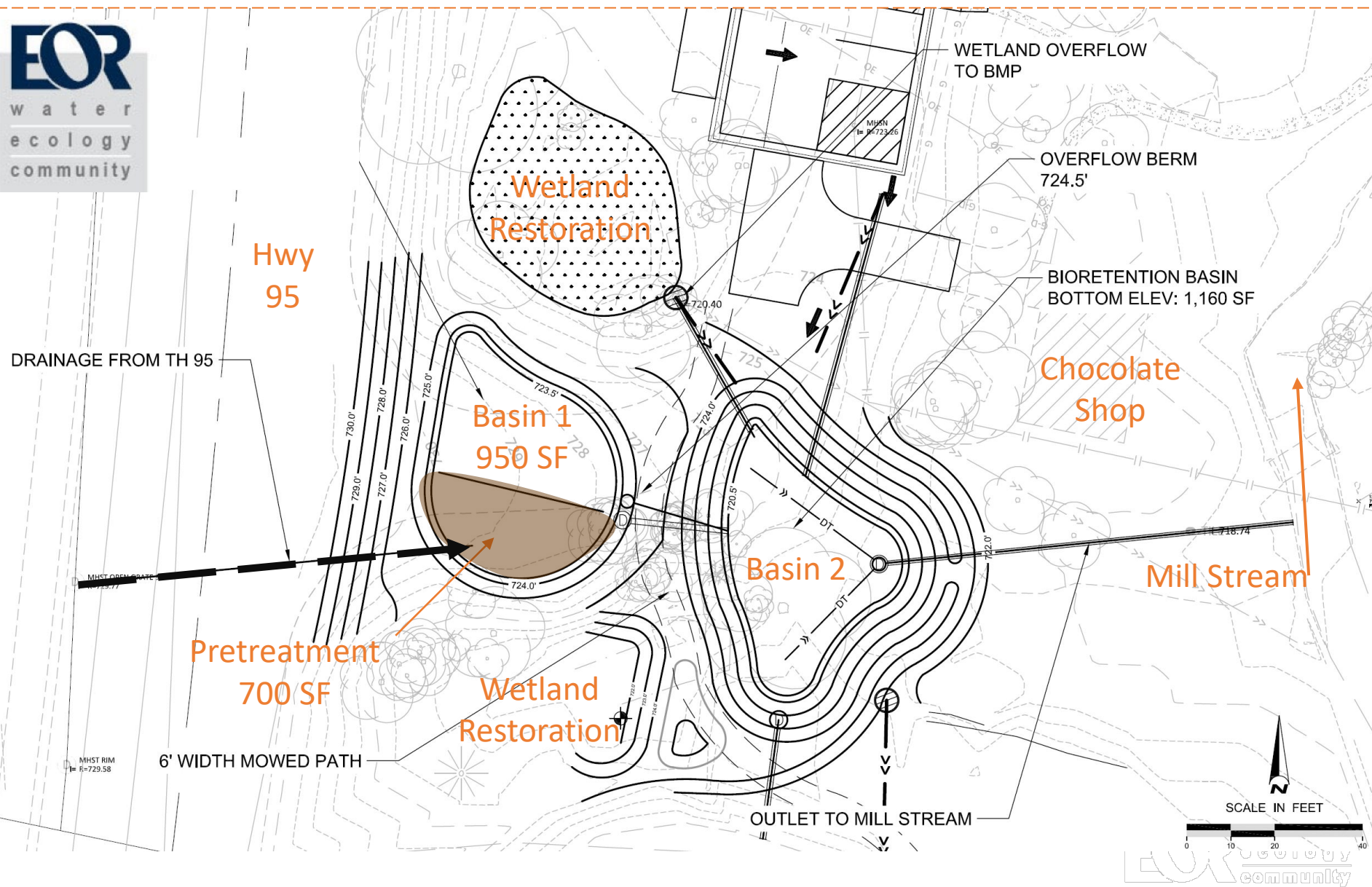
Example 1 Parker Street BMPs



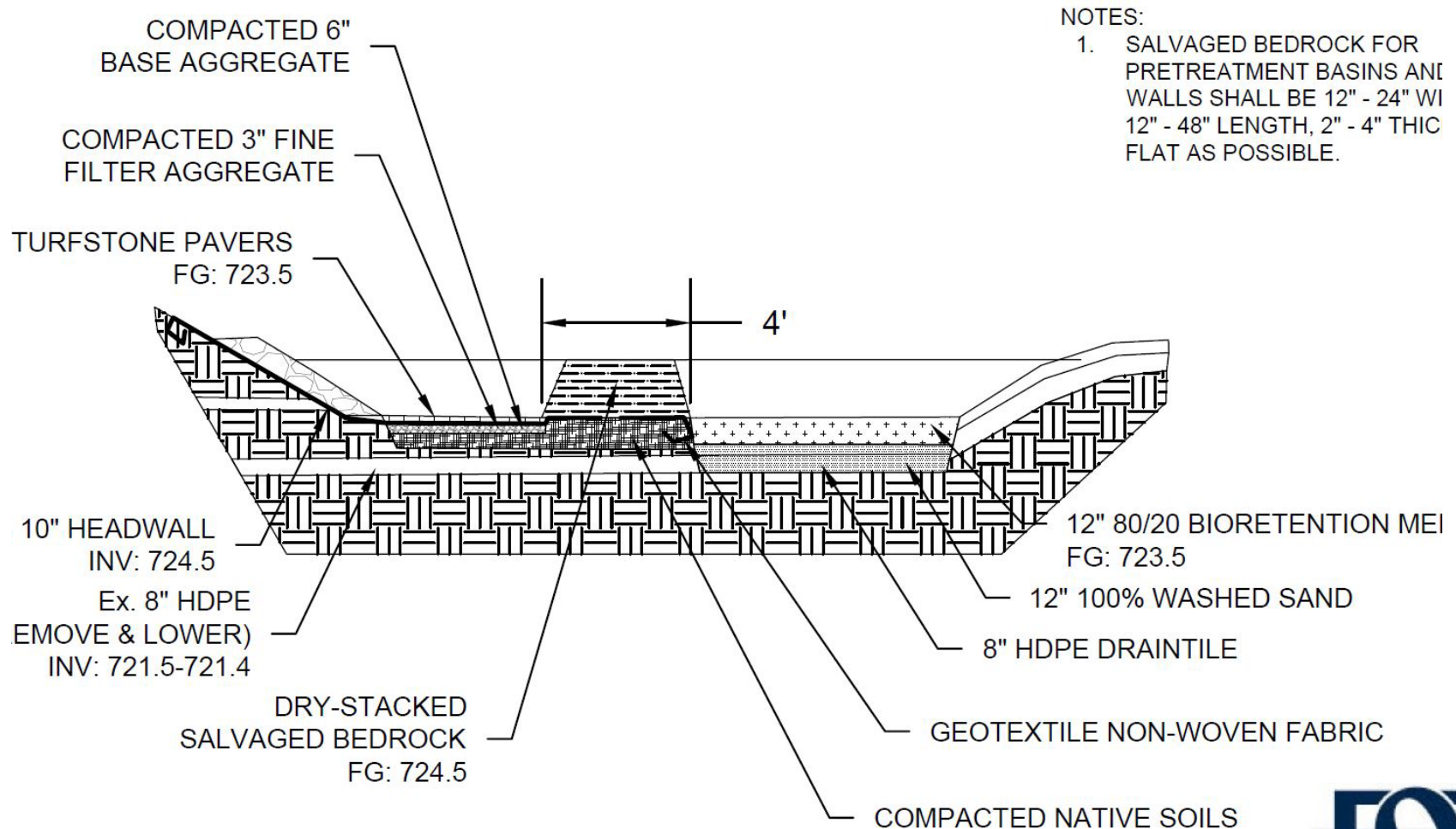
- 16.36-acre direct drainage to Mill Stream and the St Croix River
- 3,200 ft³ storage biofiltration basins



Example 1 Parker Street BMPs



Parker Street BMPs – Concept Plan



NOTES:

1. SALVAGED BEDROCK FOR PRETREATMENT BASINS AND WALLS SHALL BE 12" - 24" WIDE, 12" - 48" LENGTH, 2" - 4" THICK FLAT AS POSSIBLE.

PARKER STREET PRETREATMENT BASIN

Year 1 = 10% capacity



Example 2 Stillwater Country Club

- 9.4-acre direct drainage to the St Croix River
- 7,500 ft³ storage biofiltration basin



Middle St. Croix Watershed
Management Organization



Utilized WinSLAMM
annual load of Total
Suspended Solids

- Convert the lbs. to cf. at 100lbs:1 ft³ ratio.
- Increase the volume of the storage area based on available space to reduce the needed frequency for cleanout.



Washington Conservation District Maintenance Crew

- 1 permanent 0.5 FTE Program Lead
- 2 Seasonal maintenance workers
- 171 BMPs maintained in Washington County in 2021



Maintenance Costs

Washington Conservation District Maintenance Crew 2022

Activity	Frequency	Approximate Cost
Inlet Clean Out	2x per year	\$164
Senesced vegetation cleanout	Annually	\$164
Vegetative maintenance (removing invasive species, weeding)	5x per year (Monthly May-Sept)	\$410
Trash cleanout	Monthly	Part of vegetative maintenance
Supplemental planting and mulching	As needed	
Small erosion repairs	As needed	

2-person seasonal crew for medium sized bioinfiltration practice

Actual costs billed hourly

2020 and 2021 Maintenance



Date	Activity	Time Spent
2/6/2020	2020 Planning Meeting	3
4/8/2020	CWF Project Call	1
4/21/2020	Inlet Cleanout	8.5
5/12/2020	Vegetation Maintenance Ozark Trail	3
5/14/2020	Spring Cleanout Marine on St. Croix BMPs	7
5/15/2020	Vegetation Maintenance Scandia BMPs	2
6/8/2020	First Round of Weeding all	10
6/9/2020	First Round of Herbicide Treatments all	14
6/10/2020	First Round of Herbicide Treatments all	13
6/18/2020	Ozark Brush Removal	2
6/26/2020	Vegetative Maintenance	2.5
6/29/2020	Vegetative Maintenance	8
7/27/2020	Vegetative Maintenance	8
7/28/2020	Vegetative Maintenance	8
8/10/2020	Japanese Knotweed Treatment MSC	3.5
8/13/2020	Buckthorn Clearing at Norell/Ozark Trail BMP	9.5
8/14/2020	Knotweed Communication	.5
8/19/2020	Inlet Cleanout and Vegetation Maintenance	14.5
8/20/2020	Maintenance Planning	1
8/26/2020	Marine Inlet and Vegetation	10
9/25/2020	Marine Inspection and Planning	3
10/22/2020	BMP Reporting	4

Expenditure Totals for BMP Maintenance: \$6,751.75 for time (136 hours)

Date	Activity	Time Spent
4/30/2021	Inlet Cleanout	6
5/19/2021	Shoreline restoration follow up	6
5/27/2021	Carnelian Heights Planting and shoreline repair coordination	1.5
6/01/2021	Vegetation Maintenance Ozark Trail	13
6/07/2021	Shoreline/Ozark repair coordination	1
6/8/2021	Shoreline and Ozark Repair	19
6/10/2021	Shoreline plant pickup	1
6/11/2021	Shoreline repair planting	7
6/17/2021	Maintenance coordination	.5
6/21/2021	Vegetation evaluation	2
7/02/2021	Maintenance coordination	1
7/9/2021	Maintenance planning	.5
7/12/2021	Vegetative Maintenance	11
7/13/2021	Vegetative Maintenance MOSC	4
7/26/2021	Ozark vegetation maintenance	8
8/4/2021	Vegetation evaluation	1
8/18/2021	Vegetative maintenance	4
8/26/2021	Vegetative maintenance	2
8/30/2021	Vegetative maintenance	2.5
9/14/2021	Shoreline weeding	1
11/16/2021	BMP Reporting and 2022 Planning	2

Expenditure Totals for BMP Maintenance: \$4,423.00 for time (94 hours)

Thank you

- City of Marine on St. Croix
- Minnesota Pollution Control Agency 319 Grants
- Board of Water and Soil Resources Clean Water Fund Grant
- Bryan Pynn, Washington Conservation District (WCD)
- Cameron Blake, WCD
- Kyle Crawford, Emmons and Oliver Resources
- Tim Olson, Bolton and Menk
- Dunaway Construction



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